MCP SERVER | NO CODE | CLOUD HOSTED

Beta Calculator MCP for AI Agents

Quantifying Systematic Risk and Assessing Portfolio Volatility

The Beta Calculator immediately quantifies an asset's systematic risk profile. It calculates key metrics like Beta ($\\beta$), Jensen's Alpha ($\\alpha$), and R-Squared (R^2) by comparing your asset's historical returns against major market benchmarks (like the S&P 500). You get instant insights into volatility sensitivity, abnormal performance, and overall risk classification.

A+ Quality Score 100/100

beta | alpha | risk | volatility | regression | finance-tools

MAINTAINED BY VINKIUS CLOUD FOR AI AGENTS · JUNE 2026
vinkius.com/mcp/beta-calculator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Beta Calculator MCP

4 tools available
Cloud-hosted on Vinkius

The Beta Calculator is a specialized tool for quantifying systematic financial risk. Instead of guessing an asset's stability, you feed it periodic return data alongside chosen market benchmarks. The resulting metrics provide hard numbers: how volatile the asset is relative to the whole market, whether its returns exceeded what was expected based on its risk level, and how reliably we can predict its future movement using that benchmark. This helps portfolio managers understand if they're taking on too much or too little systemic risk in a given investment. All these metrics are accessed through Vinkius, the leading MCP catalog, allowing your AI agent to perform complex financial modeling without needing dedicated data pipelines or custom scripts. You simply ask for a risk assessment, and it delivers quantified, actionable insights.

Core Capabilities

01 — Determine volatility sensitivity

Calculates the asset's Beta coefficient, showing how much its price moves compared to a chosen market benchmark.

02 — Identify abnormal returns (Jensen's Alpha)

Determines if an investment generated returns above what was expected given its overall level of risk.

03 — Assess prediction reliability

Provides the R-Squared value, which quantifies how accurately a benchmark can predict the asset's historical behavior.

04 — Assign human-readable risk profiles

Categorizes an investment into clear risk groups—Defensive, Aggressive, or Neutral—based on its market sensitivity.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/beta-calculator** — connect your AI agent in three steps.

01 You provide your AI agent with the historical return data for an asset and a selected comparison benchmark (e.g., S&P 500).

02 The Beta Calculator processes this raw time-series data, running regressions to calculate core metrics like Beta, Alpha, and R-Squared.

03 Your agent receives a structured output: the specific numerical coefficients, plus a clear risk classification that tells you exactly what the numbers mean for your portfolio.

The bottom line is that it translates raw investment data into immediate, actionable measures of systemic financial risk.

Built For

Portfolio managers and quantitative analysts need this MCP. If you spend time manually calculating Beta or arguing over if an asset's returns were truly 'abnormal,' this tool saves hours. It gives you the rigorous, data-backed foundation for making investment calls.

Financial Analyst

Needs to quickly vet potential investments by comparing their historical volatility against established market indices.

Portfolio Manager

Must regularly assess the overall risk exposure of a diversified portfolio and adjust allocations based on quantitative metrics like Alpha.

Quant Researcher

Uses this MCP to build back-testing models, needing reliable coefficients for beta and goodness-of-fit assessments.

What Changes When You Connect

01 Instantly assess volatility sensitivity using `get_beta_coefficient`, letting you know if an asset moves too much or too little compared to the S&P 500.

02 Identify true outperformance by running `calculate_jensen_alpha` to see if returns were genuinely abnormal, separating luck from skill.

03 Reduce manual review time. Instead of reading dense financial reports, you get a clear risk profile assigned directly via `classify_asset_risk` (Defensive, Aggressive, Neutral).

04 Improve model accuracy by running `get_regression_goodness_of_fit`. This tells you if your chosen benchmark is actually useful for predicting the asset's future movement.

05 Your AI agent performs complex financial math—like calculating Alpha and Beta—in seconds, turning raw data into strategic investment insight.

Real-World Applications

Evaluating a new tech stock vs. the NASDAQ

A portfolio manager wants to know if a high-growth tech asset is too volatile for their current fund allocation. They ask their agent, and it uses `get_beta_coefficient` to determine if the stock's movement exceeds the accepted risk threshold set by the NASDAQ benchmark.

Checking if an investment outperformed expectations

A financial analyst receives a promising quarterly report but needs proof of outperformance. They run `calculate_jensen_alpha`, and the result confirms that the returns were significantly above what was expected, justifying a higher allocation.

Determining suitability for conservative investors

A wealth advisor is advising a client with low-risk tolerance. They use `classify_asset_risk` on several assets and quickly eliminate anything that isn't rated 'Defensive,' ensuring compliance with the client's mandate.

Validating predictive models for derivatives

A quant researcher needs to know if a bond index is a reliable predictor for a specific emerging market asset. They use `get_regression_goodness_of_fit` to get an R-Squared value, proving the model's statistical foundation.

Patterns to Avoid

Comparing risk without context

✗ AVOID

Just looking at a high Beta number (e.g., 1.8) and assuming it means 'bad.' You don't know if the benchmark itself is volatile or what Alpha says.

✓ INSTEAD

Always combine metrics. Use `get_beta_coefficient` to see volatility, but then run `calculate_jensen_alpha` to confirm if that high risk actually paid off with abnormal returns.

Treating historical data as prophecy

✗ AVOID

Assuming a high R-Squared value guarantees future performance. Correlation doesn't mean causation, especially in volatile markets.

✓ INSTEAD

Understand the limits of prediction. Use `get_regression_goodness_of_fit` to assess *reliability*, but always factor in qualitative market analysis alongside the quantitative score.

Ignoring risk classification

✗ AVOID

Writing off an asset because its Beta is slightly above 1.0, without considering if it still falls within a 'Neutral' category.

✓ INSTEAD

Let `classify_asset_risk` guide your decision. The human-readable profile gives immediate context to the raw numbers you calculate.

The Right Fit

Use this MCP when your decision hinges on quantifying systematic risk, not just observing returns. You need concrete metrics like Beta and Alpha to move past gut feeling. If you're building a quantitative model or managing institutional capital, this is essential. Don't use it if your goal is purely qualitative—for instance, deciding if a company has good PR or management potential. For those scenarios, you

might just need general data retrieval tools; the Beta Calculator only handles number crunching and risk metrics. If you only care about 'good performance,' remember that Alpha tells you if the returns were *better* than expected given your risk—it's much more precise.

Beta Calculator MCP for AI Agents: Analyzing Investment Volatility

Today, assessing an asset's true risk is a tedious process. Analysts manually pull historical return data into spreadsheets, comparing it against benchmarks like the S&P 500. They then spend hours running regressions just to get Beta or Alpha, often leading to delays and costly errors.

With this MCP, your agent handles the entire calculation stack. You feed in the raw returns, and the system immediately calculates volatility sensitivity using `get_beta_coefficient` and assesses abnormal returns with `calculate_jensen_alpha`. The outcome is a clear, immediate risk assessment.

Beta Calculator MCP for AI Agents: Quantifying Portfolio Risk

The biggest waste of time is flipping between multiple financial tools to get different metrics. You have to check volatility sensitivity, then check predictive reliability, and finally run a classification tool—all requiring separate inputs.

This MCP consolidates those steps. By using its combined capabilities, you instantly quantify the asset's risk profile (Defensive, Aggressive, or Neutral) while simultaneously checking how reliably that benchmark can predict future movement via `get_regression_goodness_of_fit`. It's a single source of truth.

Beta Calculator: 4 Financial Tools for Systematic Risk Analysis

Use these four tools to calculate asset volatility, measure abnormal returns, classify risk profiles, and assess predictive reliability against market benchmarks.

#	TOOL	DESCRIPTION
01	`calculate_jensen_alpha`	Compares an asset's actual returns to its risk-adjusted expected return, flagging abnormal performance.
02	`classify_asset_risk`	Generates a simple, descriptive risk rating (Defensive, Aggressive, Neutral) based on the calculated market sensitivity.
03	`get_beta_coefficient`	Determines how much an asset's volatility moves when compared to a specific benchmark index.
04	`get_regression_goodness_of_fit`	Assesses the statistical reliability of using one market benchmark to predict another asset's behavior.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U I have data for two assets. Can you calculate both their Beta relative to the Nasdaq and then classify which one is safer?

Investment Risk Assessment

- **Asset A (Tech Growth):**
* Beta: 1.65
* Risk Class: Aggressive
- **Asset B (Utilities):**
* Beta: 0.72
* Risk Class: Defensive

Based on this, Asset B is significantly less volatile than the Nasdaq and is classified as Defensive.

U What was the abnormal return for my oil investment compared to its industry average?

Jensen's Alpha Calculation

The calculation shows a positive Jensen's Alpha of **0.021**. This means your investment generated 2.1% more return than what was expected given the overall risk you took on. Great quarter.

U How reliable is using the historical CPI index to predict this bond fund's movement?

Prediction Reliability Score

The R-Squared value came out at **0.91**. This is a strong indicator, meaning 91% of the bond fund's variation can be explained by changes in the CPI index. That gives us high confidence in our forecasting.

Frequently Asked Questions

01 **What is the primary use case for the Beta Calculator MCP?**

The main job of the Beta Calculator is to quantify systemic risk. It allows you to mathematically compare an investment's volatility against major indices, giving you hard numbers on its stability and potential upside.

02 **How do I check if my returns were truly better than expected?**

Run the 'Calculate Jensen Alpha' tool. This measures abnormal returns. If Alpha is positive, it means your investment performed better than the risk-adjusted expectation for that period.

03 **Is this MCP good for determining if an asset is defensive or aggressive?**

Yes. The 'Classify Asset Risk' tool provides a simple rating—Defensive, Neutral, or Aggressive—based on the underlying volatility metrics. This helps you align your portfolio with your client's risk tolerance.

04 **What if I don't know which benchmark to use?**

You select a common index (like S&P 500 or Nasdaq) as the comparison benchmark. The MCP calculates all metrics relative to that specific market, giving you a standardized comparison point.

05 **Can I use this for multiple assets in one go?**

Yes. You can input data sets for several assets and run comparative analyses using the Beta Calculator's tools, letting your agent compare them side-by-side to find outliers.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"beta-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Beta Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

INDEPENDENT PLATFORM DISCLAIMER

Vinkius is an independent platform and is not affiliated with, endorsed by, sponsored by, verified by, or otherwise authorized by Beta Calculator. All third-party trademarks, logos, and brand names are the property of their respective owners. Their use in this document is strictly for informational purposes to identify service compatibility and interoperability.

DOCUMENT INFORMATION

Generated	June 2026
MCP Server	Beta Calculator MCP
Server ID	`019f010d-5b83-708e-9091-893dcfea0d6e`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

LICENSE & USAGE

This document is generated automatically by the Vinkius PDF Engine. Content reflects the MCP server configuration at the time of generation and may change as updates are deployed. For the most current information, visit vinkius.com/mcp/beta-calculator.